

SDI

France changes tack on research

FRANCE is making a swerve, if not an about-turn, in its attitude to the US Strategic Defense Initiative (SDI). A year ago, President Mitterrand said no to French participation in the programme, and proposed Eureka, a project for European cooperation in high-technology projects, as a counterweight. Eureka projects were to be purely civil, but, coincidentally, they were to have covered almost the whole list of its technologies to be tackled in SDI research — until negotiation with European partners modified the concept.

Eureka is still "going well" says its French coordinator, M. Yves Sillard, and could be spending in the first five years as much as \$10,000 million on items such as high-powered lasers, supercomputers and fully automated factories. But going back on its original view, and following its other European partners such as Britain and West Germany, France has now decided to join in SDI, even if M. Mitterrand has not yet graced the initiative with a final Presidential "oui".

Evidence for the change came thick and fast last month, beginning with a speech by defence minister Paul Quilès in which he declared himself "in favour" of French companies signing contracts with the US SDI office in Washington. France may be "far behind the United States in laser research", but it is "the first in Europe", Quilès claimed. France must now "accelerate its research" in lasers to keep up with SDI developments.

The defence minister's thinking was further clarified in a report published a few days after his speech. This was the result of a year's work by a defence ministry special commission on "space weapons", whose president was a French specialist in the interaction of laser beams with gases, plasmas and solid targets, Dr Jean-François Delpeche of the University de Paris Sud at Orsay.

According to the Delpeche commission, the real challenge to France in SDI lies in the Soviet military response — which Delpeche assumes will be to develop its own "guided energy" technology. Therefore, the commission argues, France will need to protect its own independent strategic nuclear weapons from SDI technology. Already, tests are under way at Marcoussis, near Paris, on the protection of French warheads from laser beams by using carbon-fibre nose-cones, the report reveals, but it will be necessary to keep up with SDI laser technology to know how to protect the missiles.

SDI technology could move rapidly, the commission suggests. A full defensive system might not be in place by 2010, but the capacity of US research should not be underestimated. Important discoveries

and innovations could make the impossible "suddenly become realizable".

For a "medium power" like France, the best and cheapest response to SDI will be to develop methods of neutralizing such a system in space (the commission expects it to be "fairly vulnerable"), as well as methods of protecting its own missiles, the report says. France must reinforce its work on continuous and pulsed high-powered lasers to develop studies on laser-target interaction; and must also not forget "third generation nuclear weapons" such as nuclear-pumped X-ray lasers.

In the light of these recommendations Quilès' remarks become clear: France must join SDI to keep up to date with the technology, if only to protect (and de-

velop) its own nuclear force.

The only cautious notes on SDI were left to be struck last week by the French research minister, M. Hubert Curien. He warned that French companies must ensure that technologies developed in partnership with the United States under the SDI banner can be reimported into France, for use in French systems.

It was also important to continue with the Eureka programme, said Curien, because it would be "catastrophic" for Europe if young European researchers gained the impression that all the glamorous research was being done across the Atlantic. For the French research minister, the great danger of SDI for Europe is a brain drain. But many French companies have already established close links with the SDI office in Washington. In SDI, France faces a *fait accompli*. The government has now decided to face it pragmatically. **Robert Walgate**

US industrial research

Kodak feels chill winds

Washington

EASTMAN Kodak last week unveiled plans for a research decentralization scheme that will directly link almost 3,000 of its formerly unbridled researchers to business divisions by the end of March. The monolithic research group in Rochester, New York, is being sliced into six units organized according to product lines rather than disciplines, with a seventh 100-man corporate laboratory continuing Kodak's long-term "blue-sky" research. Voices inside and outside the company say the change is long overdue.

The reshuffling will probably be more conceptual than physical. In its previous incarnation, Kodak's research team reported to research administrators, who then conferred with business divisions on product development. Now, individual subsectors are directly responsible to the business divisions. A spokesman said the decentralization should accelerate product development by about a quarter.

Although business-minded managers may demand more focused research projects, most researchers are greeting Kodak's plans with sighs of relief. In fact, the initiative for the re-alignment came from research managers themselves. Obscured communications between the laboratory and the boardroom were putting "a lot of good ideas on the shelf", according to one Kodak engineer. The "cushy research atmosphere," he said, led to "too much wasted effort".

Indeed, wasted effort is one thing Kodak cannot afford. In figures released last month, the \$12,000 million company showed a 64 per cent drop in net earnings, which it blamed on vigorous competition, the strength of the dollar abroad and costs

incurred in patent disputes with Polaroid that have forced Kodak to abandon the promising instant photography market. These grim reports led Kodak to announce "unfortunate but unavoidable" cuts in its worldwide workforce totalling 12,900 people, or 10 per cent. Details of the reductions have not been disclosed, but analysts suspect that research groups may be exempted because of their vital role in Kodak's attempts to foil competitors, the most formidable of which is now Japan's Fuji Film.

Even with the exemption for research, however, an authority at the Rochester Institute of Technology (RIT) noted that Kodak employment is not the pillar of stability it used to be. "They used to be a company that would take an assembly-line worker and turn him into an engineer", said Karen Paul in RIT's business department. But in the past two years, she said, the company has been "scrambling", characterized by some ill-fated acquisitions such as Verbatim, the computer accessories manufacturer.

Kodak harbours hopes that its latest extra-corporate endeavours will not be so unfortunate. Last month the company announced two separate agreements with West Coast biotechnology firms that should shore up its two-year-old life sciences division. Immunex and Kodak have formed a \$30 million joint venture for the development of lymphokine-related products, and Cetus will be farming out its expertise in monoclonal antibodies and DNA probes to expand Kodak's clinical products line. Despite past difficulties, Kodak seems to realize that the road to recovery is paved with good inventions.

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